What is claimed is:

1. A method of determining variations of a test image with respect to a reference image, the method comprising:

   a) storing the reference image in a memory, wherein the reference image comprises a plurality of pixels, wherein each of the pixels comprises at least one value;

   b) storing the test image in a memory, wherein the test image comprises a plurality of pixels, wherein each of the pixels comprises at least one value;

   c) determining an average of the values of the pixels included in an array of pixels in the reference image, wherein the array of pixels in the reference image corresponds to a location of a test image pixel in the test image;

   d) determining a difference between a value of the test image pixel and the average value of the corresponding array of pixels in the reference image;

   e) comparing the absolute difference with a maximum difference;

   f) repeating steps c), d), and e) for a plurality of test image pixels; and

   g) generating a test result indicative of the variations of the test image with respect to the reference image.

2. The method of claim 1, wherein storing a reference image comprises one or more steps of reading a reference image from a storage medium, transferring a reference image from another computer system or computer network, or calculating a value for each pixel of a reference image from equations describing each graphics operation used to create the test image.

3. The method of claim 1, wherein, for each of the test image and the reference image, said at least one value for a pixel comprises one or more color values, a gray scale value, or other values that are used to form an image.

4. The method of claim 1, wherein for each of the test image and the reference image, said at least one value for a pixel comprises one or more color values of red, green, and blue; or hue, saturation, and intensity.

5. The method of claim 1, wherein the array of reference image pixels is centered on a pixel at a position in the reference image that corresponds to the position of the test image pixel in the test image.

6. The method of claim 1, wherein, for a first iteration of c), d), and e) for a respective test image pixel, the array of pixels in the reference image consists of one pixel.

7. The method of claim 6, wherein, for a respective test image pixel, the first iteration of said determining an average value of an array of pixels in the reference image for the respective test image pixel comprises reading a value of one pixel in the reference image.

8. The method of claim 1, wherein, if the absolute difference is greater than a maximum difference in e) for a respective test image pixel, then the method further comprises repeating c), d), and e) for the respective test image pixel using a larger array of reference image pixels.

9. The method of claim 8, wherein said larger array of reference image pixels is an array that has a total number of pixels equal to $(2k+1)^2$ for k equal to a positive integer.

10. The method of claim 8, further comprising specifying a maximum reference image array size, wherein specifying further comprises receiving user input of a maximum reference image array size.

11. The method of claim 1, wherein the average value comprises a weighted average, wherein each pixel in the reference image array is given a relative weight.

12. The method of claim 11, further comprising receiving user input specifying a weighting function, wherein said determining an average value comprises using said weighting function to calculate the weighted average.

13. The method of claim 4, wherein each value has a corresponding maximum difference.

14. The method of claim 1, wherein said absolute difference and said maximum difference are percentage differences.

5 15. The method of claim 1, further comprising selecting specified test image pixels for comparison with the reference image, wherein test image pixels selected comprise one or more regions of the test image.

16. The method of claim 15, wherein said one or more regions comprise a specified subset,
10   several subsets, or all of the test image pixels.

17. The method of claim 15, further comprising receiving user input restricting said determining variations of a test image to one or more regions of the test image.

15 18. The method of claim 15, wherein generating a test result for a region comprises outputting a test result of failure if the absolute difference for any one test image pixel in the region is greater than the maximum difference.

19. The method of claim 15, wherein generating a test result comprises outputting a test result of
20   pass for a region if the absolute differences for all test image pixels in the region are less than the maximum difference.

20. The method of claim 15, further comprising storing said differences for all test image pixels that are part of said regions.

25

21. The method of claim 15, wherein generating a test result further comprises calculating, for all test image pixels that are part of a region, one or more of the mean and variance of all absolute differences, a mean and variance of all acceptable absolute differences, a mean and variance of all unacceptable absolute differences, a maximum absolute difference, a
30   minimum absolute difference, a range of absolute differences, and a histogram of the differences or the absolute differences.

22. The method of claim 1, wherein generating a test result further comprises one or more of displaying, printing, and storing the test result.

23. A memory medium comprising program instructions for determining variations of a test image with respect to a reference image, wherein the program instructions are executable to implement:

   a) storing the reference image in a memory, wherein the reference image comprises a plurality of pixels, wherein each of the pixels comprises at least one value;

   b) storing the test image in a memory, wherein the test image comprises a plurality of pixels, wherein each of the pixels comprises at least one value;

   c) selecting a test image pixel from the test image;

   d) determining an average of the values of one or more pixels in the reference image, wherein the one or more pixels in the reference image corresponds to a location of a test image pixel in the test image;

   e) deriving an absolute difference between the value of the selected test image pixel and the average value of the corresponding array of pixels in the reference image;

   f) comparing the absolute difference with a maximum difference;

   g) repeating steps c), d), e), and f) for a plurality of test image pixels; and

   h) generating a test result indicative of the variations of the test image with respect to the reference image.

24. A memory medium, comprising:

a reference image, wherein the reference image comprises a plurality of pixels, wherein each of the pixels comprises at least one value;

a test image, wherein the test image comprises a plurality of pixels, wherein each of the pixels comprises at least one value;

program instructions for determining variations of the test image with respect to the reference image, wherein the program instructions are executable to implement:

    a). selecting a test image pixel from the test image;

    b). determining an average of the values of one or more pixels in the reference image, wherein the one or more pixels in the reference image corresponds to a location of a test image pixel in the test image;

    c). deriving an absolute difference between the selected test image pixel and the average value of the corresponding array of pixels in the reference image;

    d). comparing the absolute difference with a maximum difference;

    e). repeating steps a), b), c), and d) for a plurality of test image pixels; and

    f). generating a test result indicative of the variations of the test image with respect to the reference image.

25. The memory medium of claim 24, wherein a reference image is one or more reference images, a test image is one or more test images, and program instructions are executable to implement selecting one or more of the reference images for comparison to a test image.

26. The memory medium of claim 24, further comprising test results.

27. A system for determining variations of a test image with respect to a reference image, the system comprising:

a memory medium that stores:

the reference image, wherein the reference image comprises a plurality of pixels, wherein each of the pixels comprises at least one value;

the test image, wherein the test image comprises a plurality of pixels, wherein each of the pixels comprises at least one value; and

a software program executable to determine variations of the test image with respect to the reference image;

a processor coupled to the memory medium, wherein the processor is operable to execute the software program to implement:

a). selecting a test image pixel from the test image;

b). determining an average of the values of one or more pixels in the reference image, wherein the one or more pixels in the reference image corresponds to a location of a test image pixel in the test image;

c). determining an absolute difference between the value of the selected test image pixel and the average value of the corresponding array of pixels in the reference image;

d). comparing the absolute difference with a maximum difference;

e). repeating steps a), b), c), and d) for a plurality of test image pixels; and

f). generating a test result indicative of the variations of the test image with respect to the reference image.

28. The system of claim 27, further comprising one or more display devices for displaying the test result.

29. The system of claim 27, further comprising one or more input devices for entering data.

30. A method of determining variations of a test image with respect to a reference image, wherein the reference image comprises a plurality of pixels, wherein each of the pixels comprises at least one value, wherein the test image comprises a plurality of pixels, wherein each of the pixels comprises at least one value, the method comprising:

a) determining an average of the values of the pixels included in an array of pixels in the reference image, wherein the array of pixels in the reference image corresponds to a location of a test image pixel in the test image;

b) determining a difference between a value of the test image pixel and the average value of the corresponding array of pixels in the reference image;

c) comparing the absolute difference with a maximum difference;

d) repeating steps a), b), and c) for a plurality of test image pixels; and

e) generating a test result indicative of the variations of the test image with respect to the reference image.